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EXAMINER	
RYMAN, DANIEL J	
ART UNIT	**PAPER NUMBER**
2665	14

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/273,197	GALLAGHER, ROBERT T.
	Examiner	**Art Unit**
	Daniel J. Ryman	2665

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 31 March 2004.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 1-3,5-7,9-16,18 and 20-22 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 1-3,5-7,9-16,18 and 20-22 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date 2 and 22.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed 3/31/2004 have been fully considered but they are not persuasive. On pages 10-11 of the Response, Applicant argues with respect to claims 1-3 that Smith is not combinable with Farhan and Dail since Smith contains link redundancy and link reconfigurability while Farhan and Dail do not contain such features. Examiner, respectfully, disagrees that the references are not combinable. Examiner submits that Farhan and Dail do not need to teach the use of redundancy since Smith explicitly teaches the use redundant links and advantages of employing redundant links. Therefore, Examiner submits that even if Farhan and Dail do not disclose the use of redundant links, one of ordinary skill in the art would have been motivated to include redundant links in Farhan and Dail in order to increase the reliability of the system (Smith: col. 6, lines 5-42). Given the teachings of Smith, Examiner maintains that it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate data from a status monitor in the baseband digital signal transmitted to the head end in order to inform the head end of the information collected by the status monitor.

2. On pages 11-12, Applicant argues with respect to claim 5 that Sayeed teaches away from the proposed combination. Specifically, Applicant seems to assert that by teaching that other methods would be preferable, Sayeed is teaching away from the method proposed in the claim. Examiner, respectfully, disagrees. Examiner relies on Sayeed's prior art teachings in order to reject the claims. Examiner submits that Sayeed may, in order to demonstrate the benefits of the invention, teach that the invention is preferable to the prior art teachings. However, Sayeed's inventive teachings also can be used to reject the claims since Sayeed's invention also

incorporates BER performance data into a signal (col. 2, line 66-col. 3, line 7). Therefore, Examiner submits that Sayeed is not teaching away from measuring and transmitting BER data, as disclosed in the claim, as Applicant asserts, but rather Sayeed is teaching away from the other elements of the prior art. As such, Examiner maintains that Sayeed teaches measuring and transmitting BER data as disclosed in the claim.

3. On pages 12-13, Applicant argues with respect to claim 6 that Johnson and Petroff are not combinable with Farhan and Dail since the references do not provide motivation for the combination. Examiner, respectfully, submits that obviousness can be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Johnson and Petroff teach a system that is equivalent to the system of Farhan and Dail; however, the system of Johnson and Petroff contains a fewer number of A/D converters. Reducing the number of A/D converters provides benefits such as reducing the cost of the node by require fewer components for the construction of the node and reducing the size of the node. As such, Examiner is not relying on the level of skill in the art *per se* to make the combination, but rather Examiner is relying on knowledge generally available to one of ordinary skill in the art, namely that it is beneficial to reduce the number of components in a system while maintaining the same functionality. Therefore, Examiner maintains that Johnson and Petroff are combinable with Farhan and Dail.

4. Applicant further argues that Dail teaches away from the proposed combination of Johnson and Petroff with Farhan and Dail. Examiner, respectfully, submits that the combination is proper regardless of whether or not Dail teaches away from the proposed combination. Examiner notes that Farhan is used as the base reference for the combination where Farhan teaches a node which performs A/D conversion within the node. Examiner relies on Dail merely to teach that it is obvious to transmit a baseband digital signal. Since Dail is not relied on to provide teachings to modify the A/D conversion that occurs in Farhan, Examiner maintains that Farhan provides the only relevant teachings in the combination of Farhan and Dail concerning A/D conversion. As such, the combination of Johnson and Petroff with Farhan and Dail is proper since Farhan (the base reference) explicitly teaches a method for performing A/D conversion that occurs within the node and Johnson and Petroff teach a different method for performing the A/D conversion within the node. Given that Farhan is the base reference and Farhan teaches that A/D conversion occurs in the optical distribution node, Examiner maintains that the combination is proper.

5. On pages 14-15, Applicant argues that the remaining claims are allowable for reasons analogous to those presented above. Given the arguments presented above, Examiner maintains the rejection of all the pending claims. Examiner urges Applicant to amend the claims to add additional limitations which will distinguish the claims from the prior art.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1-3, 7, 9-11, 13-16, 18, 20, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farhan et al (USPN 6,373,611) in view of Dail (USPN 5,878,325) in further view of Smith, III (USPN 4,112,488).

8. Regarding claims 1 and 13, Farhan discloses a hybrid fiber/coax network, comprising: a head end (ref. 105) (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); at least one optical distribution node (ref. 115) coupled to the head end over at least one fiber optic link (ref. 110) (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); a plurality of coaxial cable links (ref. 120) coupled to each of the at least one optical distribution node (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); a transmitter, disposed at the optical distribution node, that is responsive to signals from the plurality of coaxial cable links, that converts analog signals to digital signals and that transmits the digital signals to the head end over the at least one optical link (ref. 200) (col. 2, lines 26-67); and a receiver, disposed at the head end, that is responsive to the digital signals from the transmitter and that converts the digital signals to analog signals for the head end (ref. 305) (col. 3, lines 1-25). Farhan does not explicitly disclose that the digital signals are baseband digital signals; however, Farhan does disclose that the headend receives a modulated signal, demodulates the modulated signal to baseband, and then converts this baseband signal to an optical signal for transmission downstream (col. 1, line 63-col. 2, line 14). Dail teaches, in a hybrid fiber-coax system, having the digital signals be baseband digital signals in order to reduce ingress noise (abstract; col. 4, lines 22-39; and col. 4, line 64-col. 5, line 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use baseband digital signals in order to reduce ingress noise. Farhan in view of Dail does not expressly disclose that

the transmitter incorporates data from a status monitor in the baseband digital signal transmitted to the head end. Smith teaches having a node monitor which reports data to a central control node so that the central control node can "take action to control the use of links associated with the node" if there are any problems with the node (col. 6, lines 27-32 and col. 10, lines 56-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the transmitter incorporate data from a status monitor in the baseband digital signal transmitted to the head end in order to inform the head end of the information collected by the status monitor.

9. Regarding claims 2 and 14, referring to claims 1 and 13, Farhan in view of Dail in further view of Smith does not expressly disclose that the transmitter includes a analog to digital converter that is operable to generate at least 850 Megabits per second; however, Farhan in view of Dail in further view of Smith does disclose an A/D converter that is operable to generate a rate (Farhan: col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25). It is generally considered to be within the ordinary skill in the art to adjust, vary, select, or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value. The burden of showing criticality is on applicant. In re Mason, 87 F.2d 370, 32 USPQ 242 (CCPA 1937); Marconi Wireless Telegraph Co. v. U.S., 320 U.S. 1, 57 USPQ 471 (1943); In re Schneider, 148 F.2d 108, 65 USPQ 129 (CCPA 1945); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1055); In re Saether, 492 F.2d 849, 181 USPQ 36 (CCPA 1974); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Since Farhan in view of Dail in further view of Smith discloses an A/D converter that is operable to generate a

rate, it would have been obvious to generate any rate, including at least 850 Megabits per second, absent a showing of criticality by Applicant.

10. Regarding claims 3, 15, and 16, referring to claims 1 and 13, Farhan in view of Dail in further view of Smith discloses that the transmitter separately converts signals from the plurality of coaxial cables into separate, n-bit signals, and combines the separate n-bit signals into a serial data stream (Farhan: Fig. 5; col. 4, lines 47-65; and col. 5, lines 27-53).

11. Regarding claim 7, Farhan discloses a transmitter for an optical distribution node, the transmitter comprising: at least one analog to digital converter that creates digital data from the return path signals (Fig. 5; col. 2, lines 40-67; col. 4, lines 30-46; and col. 5, lines 27-45); at least one multiplexer, responsive to the at least one analog to digital converter, that creates a serial data stream from the digital data from the at least one analog to digital converter (Fig. 5; col. 2, lines 40-67; col. 4, lines 30-46; and col. 5, lines 10-45); an optical transmitter, responsive to the at least one multiplexer, that is operable to transmit the serial data stream to a head end as a digital signal (Fig. 5; col. 2, lines 40-67; col. 4, lines 30-46; and col. 5, lines 27-45). Farhan does not explicitly disclose at least one bandpass filter that is operable to select a portion of the frequency spectrum that is associated with return path signals for a hybrid fiber/coax network, where the A/D converter is responsive to the at least one bandpass filter; however, Farhan does disclose that the return path signals for a hybrid fiber/coax network are associated with a portion of the frequency spectrum (col. 5, lines 46-52). Farhan also discloses the use of filters to select a portion of a frequency band (col. 3, lines 15-26). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have at least one bandpass filter that is operable to select a portion of the frequency spectrum that is associated with return path signals

for a hybrid fiber/coax network, where the A/D converter is responsive to the at least one bandpass filter, in order to select the signals on the return path of the coax network. Farhan does not explicitly disclose that the digital signals are baseband digital signals; however, Farhan does disclose that the headend receives a modulated signal, demodulates the modulated signal to baseband, and then converts this baseband signal to an optical signal for transmission downstream (col. 1, line 63-col. 2, line 14). Dail teaches, in a hybrid fiber-coax system, having the digital signals be baseband digital signals in order to reduce ingress noise (abstract; col. 4, lines 22-39; and col. 4, line 64-col. 5, line 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use baseband digital signals in order to reduce ingress noise. Farhan in view of Dail does not expressly disclose a monitor that monitors the operation of the optical distribution node and that creates status data for transmission to a head end in the serial data stream. Smith teaches having a node monitor which reports data to a central control node so that the central control node can "take action to control the use of links associated with the node" if there are any problems with the node (col. 6, lines 27-32 and col. 10, lines 56-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to have a monitor that monitors the operation of the optical distribution node and that creates status data for transmission to a head end in the serial data stream in order to inform the head end of the information collected by the status monitor.

12. Regarding claim 9, referring to claim 7, Farhan in view of Dail in further view of Smith does not expressly disclose that the bandpass filter include a pass band in the range from 5 to 42 MHZ; however, Farhan in view of Dail does suggest that the bandwidth filter would have a pass band in the range from 5 to 40 MHZ (Farhan: col. 5, lines 46-52). It is generally considered to be

within the ordinary skill in the art to adjust, vary, select, or optimize the numerical parameters or values of any system absent a showing of criticality in a particular recited value. The burden of showing criticality is on applicant. In re Mason, 87 F.2d 370, 32 USPQ 242 (CCPA 1937); Marconi Wireless Telegraph Co. v. U.S., 320 U.S. 1, 57 USPQ 471 (1943); In re Schneider, 148 F.2d 108, 65 USPQ 129 (CCPA 1945); In re Aller, 220 F.2d 454, 105 USPQ 233 (CCPA 1055); In re Saether, 492 F.2d 849, 181 USPQ 36 (CCPA 1974); In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977); In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). Since Farhan in view of Dail suggests that the pass band would have a frequency range, it would have been obvious to have any frequency range, including from 5 to 42 MHZ, absent a showing of criticality by Applicant.

13. Regarding claim 10, referring to claim 7, Farhan in view of Dail in further view of Smith discloses that the at least one analog to digital converter includes one analog to digital converter for each coaxial link associated with the transmitter (Farhan: Fig. 5; col. 4, lines 47-65; and col. 5, lines 27-53).

14. Regarding claim 11, referring to claim 7, Farhan in view of Dail in further view of Smith, as broadly defined, discloses that the at least one multiplexer comprises: one first stage multiplexer for each coaxial link associated with the transmitter (P/S) (Fig. 5; col. 4, lines 47-65; and col. 5, lines 10-45); and an additional multiplexer coupled to the output of each of the first stage multiplexers (interleaver) (Fig. 5; col. 4, lines 47-65; and col. 5, lines 10-45).

15. Regarding claim 18, Farhan discloses a receiver for a digital data return path of a head end in a hybrid fiber/coax network, the receiver comprising: an optical receiver that is operable to receive a serial, digital signal from an optical link (Fig. 6; col. 3, lines 1-26; and col. 4, line

66-col. 5, line 45); at least one demultiplexer, responsive to the optical receiver, that demultiplexes the digital signal (Fig. 6; col. 3, lines 1-26; and col. 4, line 66-col. 5, line 45); at least one digital to analog converter, responsive to the at least one demultiplexer, that creates analog signals for the head end (Fig. 6; col. 3, lines 1-26; and col. 4, line 66-col. 5, line 45); and at least one filter (Fig. 6; col. 3, lines 1-26; and col. 4, line 66-col. 5, line 45), where Farhan implicitly discloses that the filter is operable to compensate for quantization effects in the frequency spectrum that is associated with return path signals for a hybrid fiber/coax network. Farhan does not explicitly disclose that the digital signals are baseband digital signals; however, Farhan does disclose that the headend receives a modulated signal, demodulates the modulated signal to baseband, and then converts this baseband signal to an optical signal for transmission downstream (col. 1, line 63-col. 2, line 14). Dail teaches, in a hybrid fiber-coax system, having the digital signals be baseband digital signals in order to reduce ingress noise (abstract; col. 4, lines 22-39; and col. 4, line 64-col. 5, line 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use baseband digital signals in order to reduce ingress noise. Farhan in view of Dail does not expressly disclose that the at least one demultiplexer removes status data for the head end from the serial baseband signal. Smith teaches having a node monitor which reports data to a central control node so that the central control node can “take action to control the use of links associated with the node” if there are any problems with the node (col. 6, lines 27-32 and col. 10, lines 56-65). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the at least one demultiplexer remove the status data for the head end from the serial baseband signal in order to inform the head end of the information collected by the status monitor.

16. Regarding claim 20, referring to claim 18, Farhan in view of Dail in further view of Smith discloses that the at least one digital to analog converter includes one digital to analog converter for each coaxial link associated with the receiver (Farhan: Fig. 6; col. 4, line 66-col. 5, line 10; and col. 5, lines 27-45).

17. Regarding claim 21, referring to claim 18, Farhan in view of Dail in further view of Smith discloses that the at least one demultiplexer comprises: one first stage demultiplexer for each coaxial link associated with the receiver (S/P) (Fig. 6 and col. 4, line 66-col. 5, line 45); and an additional demultiplexer coupled to an input of each of the first stage demultiplexers (disinterleaver) (Fig. 6 and col. 4, line 66-col. 5, line 45).

18. Claims 5 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Farhan et al (USPN 6,373,611) in view of Dail (USPN 5,878,325) in further view of Sayeed et al (USPN 5,828,677).

19. Regarding claim 5, Farhan discloses a hybrid fiber/coax network, comprising: a head end (ref. 105) (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); at least one optical distribution node (ref. 115) coupled to the head end over at least one fiber optic link (ref. 110) (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); a plurality of coaxial cable links (ref. 120) coupled to each of the at least one optical distribution node (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); a transmitter, disposed at the optical distribution node, that is responsive to signals from the plurality of coaxial cable links, that converts analog signals to digital signals and that transmits the digital signals to the head end over the at least one optical link (ref. 200) (col. 2, lines 26-67); and a receiver, disposed at the head end, that is responsive to the digital signals from the transmitter and that converts the digital signals to analog signals for the head end (ref. 305) (col.

3, lines 1-25). Farhan does not explicitly disclose that the digital signals are baseband digital signals; however, Farhan does disclose that the headend receives a modulated signal, demodulates the modulated signal to baseband, and then converts this baseband signal to an optical signal for transmission downstream (col. 1, line 63-col. 2, line 14). Dail teaches, in a hybrid fiber-coax system, having the digital signals be baseband digital signals in order to reduce ingress noise (abstract; col. 4, lines 22-39; and col. 4, line 64-col. 5, line 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use baseband digital signals in order to reduce ingress noise. Farhan in view of Dail does not expressly disclose that the transmitter incorporates bit error rate link performance data into the baseband digital signal transmitted to the head end. Sayeed teaches, in a communication system, sending line information, such as BER, back to a transmitter in order to allow the transmitter to use that information to adjust transmission characteristics (col. 2, lines 35-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate bit error rate link performance data into the baseband digital signal transmitted to the head end in order to permit the head end to use the data in a manner which ensures low BER on the line by adjusting the transmission properties at the head end.

20. Regarding claim 12, Farhan discloses a transmitter for an optical distribution node, the transmitter comprising: at least one analog to digital converter that creates digital data from the return path signals (Fig. 5; col. 2, lines 40-67; col. 4, lines 30-46; and col. 5, lines 27-45); at least one multiplexer, responsive to the at least one analog to digital converter, that creates a serial data stream from the digital data from the at least one analog to digital converter (Fig. 5; col. 2, lines 40-67; col. 4, lines 30-46; and col. 5, lines 10-45); an optical transmitter, responsive to the

at least one multiplexer, that is operable to transmit the serial data stream to a head end as a digital signal (Fig. 5; col. 2, lines 40-67; col. 4, lines 30-46; and col. 5, lines 27-45). Farhan does not explicitly disclose at least one bandpass filter that is operable to select a portion of the frequency spectrum that is associated with return path signals for a hybrid fiber/coax network, where the A/D converter is responsive to the at least one bandpass filter; however, Farhan does disclose that the return path signals for a hybrid fiber/coax network are associated with a portion of the frequency spectrum (col. 5, lines 46-52). Farhan also discloses the use of filters to select a portion of a frequency band (col. 3, lines 15-26). Therefore it would have been obvious to one of ordinary skill in the art at the time of the invention to have at least one bandpass filter that is operable to select a portion of the frequency spectrum that is associated with return path signals for a hybrid fiber/coax network, where the A/D converter is responsive to the at least one bandpass filter, in order to select the signals on the return path of the coax network. Farhan does not explicitly disclose that the digital signals are baseband digital signals; however, Farhan does disclose that the headend receives a modulated signal, demodulates the modulated signal to baseband, and then converts this baseband signal to an optical signal for transmission downstream (col. 1, line 63-col. 2, line 14). Dail teaches, in a hybrid fiber-coax system, having the digital signals be baseband digital signals in order to reduce ingress noise (abstract; col. 4, lines 22-39; and col. 4, line 64-col. 5, line 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use baseband digital signals in order to reduce ingress noise. Farhan in view of Dail does not expressly disclose bit error rate link performance data that is coupled to the at least one multiplexer to be included in the serial data stream. Sayeed teaches, in a communication system, sending line information, such as BER, back to a

transmitter in order to allow the transmitter to use that information to adjust transmission characteristics (col. 2, lines 35-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to have bit error rate link performance data that is coupled to the at least one multiplexer to be included in the serial data stream in order to permit the head end to use the data in a manner which ensures low BER on the line by adjusting the transmission properties at the head end.

21. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farhan et al (USPN 6,373,611) in view of Dail (USPN 5,878,325) in further view of Johnson et al (USPN 3,995,144) and Petroff (USPN 5,198,989).

22. Regarding claim 6, Farhan discloses a hybrid fiber/coax network, comprising: a head end (ref. 105) (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); at least one optical distribution node (ref. 115) coupled to the head end over at least one fiber optic link (ref. 110) (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); a plurality of coaxial cable links (ref. 120) coupled to each of the at least one optical distribution node (col. 1, lines 10-21 and col. 1, line 63-col. 2, line 25); a transmitter, disposed at the optical distribution node, that is responsive to signals from the plurality of coaxial cable links, that converts analog signals to digital signals and that transmits the digital signals to the head end over the at least one optical link (ref. 200) (col. 2, lines 26-67); and a receiver, disposed at the head end, that is responsive to the digital signals from the transmitter and that converts the digital signals to analog signals for the head end (ref. 305) (col. 3, lines 1-25). Farhan does not explicitly disclose that the digital signals are baseband digital signals; however, Farhan does disclose that the headend receives a modulated signal, demodulates the modulated signal to baseband, and then converts this baseband signal to an

optical signal for transmission downstream (col. 1, line 63-col. 2, line 14). Dail teaches, in a hybrid fiber-coax system, having the digital signals be baseband digital signals in order to reduce ingress noise (abstract; col. 4, lines 22-39; and col. 4, line 64-col. 5, line 30). It would have been obvious to one of ordinary skill in the art at the time of the invention to use baseband digital signals in order to reduce ingress noise. Farhan in view of Dail does not expressly disclose that the transmitter combines signals from the plurality of coaxial cables prior to converting the signals to baseband digital signals. Rather Farhan in view of Dail discloses that the transmitter converts the signals from the coaxial cables prior to combining the signals (Farhan: Fig. 5 and col. 5, lines 27-53). However, such an arrangement is well known in the art, as is evidenced by Johnson (Fig. 1, ref. 21 and 22 and col. 6, line 68-col. 7, line 11) and Petroff (Fig. 2, ref. 102 and 106 and col. 6, lines 19-29). It is implicit that such an arrangement only necessitates a single analog-to-digital converter instead of one converter for each input, thus decreasing the number of analog-to-digital converter needed in the system. It would have been obvious to one skilled in the art at the time of the invention use a multiplexer to combine signals before performing analog to digital conversion in order to implement the system with a single analog-to-digital converter instead of one converter for each input.

23. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Farhan et al (USPN 6,373,611) in view of Dail (USPN 5,878,325) in further view of Smith, III (USPN 4,112,488) as applied to claim 18 above, and further in view of Sayeed et al (USPN 5,828,677).

24. Regarding claim 22, referring to claim 18, Farhan in view of Dail in further view of Smith does not expressly disclose that the at least one demultiplexer removes bit error rate data from the serial baseband signal. Sayeed teaches, in a communication system, sending line

information, such as BER, back to a transmitter in order to allow the transmitter to use that information to adjust transmission characteristics (col. 2, lines 35-46). It would have been obvious to one of ordinary skill in the art at the time of the invention to have the demultiplexer remove BER data from the serial baseband signal in order to permit the head end to use the data in a manner which ensures low BER on the line by adjusting the transmission properties at the head end.

Conclusion

25. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Krimmel (USPN 6,134,035) see entire document which pertains to an optical network termination unit for a hybrid fiber/coax access network.

26. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, THIS ACTION IS MADE FINAL. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel J. Ryman whose telephone number is (703)305-6970. The examiner can normally be reached on Mon.-Fri. 7:00-5:00 with every other Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Huy Vu can be reached on (703)308-6602. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel J. Ryman
Examiner
Art Unit 2665

DJR
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